Department of Statistics
University of California, Berkeley

Frequently Asked Questions and Resources

FREQUENTLY ASKED QUESTIONS

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1. If I took the AP Exam, A-Levels, IB or courses at another college, can I waive out of the pre-major Math requirements?

The Statistics Department defers to the Mathematics Department's evaluation of course equivalence to the pre-major requirements. Here are currently established standards:

a) ***AP Credit.*** If you received a score of 3 or higher on the AP Calculus AB Exam, or a score of 3 or 4 on the AP Calculus BC Exam, then Math 1A requirement is waived. If you received a 5 on the AP Calculus BC Exam, both the Math 1A and Math 1B requirements are waived. You will still need to take Math 53 and Math 54, in which one must be taken at a UC.

b) ***Transfer Credit, A-Levels, and IB.*** Students who took courses at a California community college can determine whether those courses are equivalent to UC Berkeley courses using the Assist.org tool. Courses taken at another 4-year institution or a community college outside of California need to be evaluated by the UC Berkeley Mathematics Department (970 Evans Hall). Bring the completed evaluation(s) with you when you are ready to declare the major.

If you have A-Level Math exam credits or an International Baccalaureate (IB), you can waive out of Math 1A and/or Math 1B. We abide by what the Math Department deems as equivalent, which is subject to change:

- A-Level Math (grade of "B" or better) = Math 1A Equivalency
- A-Level Further Math (grade of "B" or better) = Math 1A & Math 1B Equivalency
- IB Math Higher Level (grades 5, 6 or 7) = Math 1A Equivalency

If you have taken equivalents of ALL FOUR prerequisite courses at non-UC institutions, you are still required to take at least one Math course at Berkeley to establish a UC GPA. You may choose MATH 54 (B+ required) or MATH 110 (B required) or alternative course with consent of the Head Undergraduate Faculty Advisor.

Students lacking partial material in lower division prerequisites should see the Mathematics Department to discuss the possibility of completing Mathematics 49. For example, students lacking the material on linear algebra in Mathematics 54 may learn this material by enrolling in Mathematics 49 and attending the portion of Math 54 on Linear Algebra. Pick up information sheet from the Mathematics Department, 970 Evans.

2. **What if I took Math 16A-16B series at UC Berkeley? Math 10A-10B at UC Berkeley?**
   If you have only completed Math 16A, you must still complete Math 1A or equivalent (at another college is fine as long as it is equivalent according to assist.org or the Math Department). If you took both Math 16A and Math 16B, you can waive out of Math 1A, but must take Math 1B or equivalent. Students can no longer take Math 49 to learn the Math 1B material lacking in Math 16B.

   Students who have completed the Math 10A-10B series should see the Head Undergraduate Faculty Advisor. Bring a copy of your transcript.

3. **Does taking X1A-B through UC Berkeley Extension fulfill Math 1A-B at UC Berkeley?**
   Generally, NO. The Statistics Departmet defers to the evaluation of the UC Extension courses by the UC Berkeley Math Department. In Spring 2012, the Math Department faculty reviewed the X1A-B curriculum and deemed the courses *not* equivalent to Math 1A-B at UC Berkeley. Students who have not yet taken X1A or X1B should NOT take them to satisfy Statistics major requirements. Students who have already taken X1A-B may request an evaluation from the Math Department to determine if Math 1A or 1B need to be taken. Grades in other math courses like Math 53 and Math 54 are factored into whether or not a student would need to take 1A or 1B.

   Please note: MATH XB1A and XB1B (in-class courses offered through the Fall Program for Freshman) ARE equivalent to Math 1A and 1B and are accepted as prerequisites for the Statistics major. These courses are different from the online Math X1A and X1B offered through UC Extension.

4. **I took a prerequisite and earned a P. Can I declare?**
   No, you must earn at least a C in prerequisite before you can declare and meet the minimum 3.2 math prerequisite GPA. To calculate the GPA, a letter grade is required. You will need to repeat the course or see the Head Undergraduate Faculty Advisor about alternatives, such as taking an upper division math course. These kinds of exceptions are considered on an individual basis by the Head Undergraduate Faculty Advisor and are rare.

5. **I received a C- in a prerequisite. Can I declare?**
   No, you must earn at least a C in *each* prerequisite before you can declare as well as have at least a 3.2 GPA in the math prerequisites. You will need to repeat the course.

6. **I am enrolled in my last prerequisite. Can I declare?**
   You can submit an application, but you will not be declared until *all* prerequisites are completed. We do not offer conditional declarations.

7. **Do the NEW PREQUISITES apply to me?**
   If you have finished Math 1A, 1B, 53 and 54 or equivalent courses (as verified by assist.org or the UC Berkeley Math Department), with at least a C or higher by the end of Spring 2013, the new prerequisites do *not* apply to you. The new prerequisites apply to all other students.

8. **How do I know if any transfer courses I have taken can be used for the major or minor?**
   a) ***Prerequisite Math Courses***. See *Transfer Credit, A-Levels, and IB* above.

   b) ***Upper Division Statistics Courses.*** The Statistics Department Head Undergraduate Faculty Advisor can evaluate upper division non-UC Berkeley coursework for equivalency. Submit an Evaluation of Non-UC Berkeley Course request form (obtain in 367 Evans or on the Statistics Undergraduate Advising website) along with supporting material-- course description, syllabus, and textbook information. The Head Undergraduate Faculty Advisor can also

approve use of upper division transfer courses to fulfill any upper division major requirements (15x-level and cluster courses). Three-unit courses that last a trimester or quarter are not equivalent to any Berkeley course.

9. How many courses can I take elsewhere to substitute for Statistics Major Requirements?

Statistics majors can substitute up to 3 upper division courses, with *at most* 2 fulfilling Statistics upper division courses (Stat 133, 134, 135, and the 15x-level electives). In other words, you may not satisfy more than 2 Statistics courses but you could satisfy all 3 applied cluster courses through transfer coursework. Prior approval must be granted by the Head Undergraduate Faculty Advisor.

10. How do I choose an APPLIED CLUSTER?

The applied cluster is a chance to learn about areas in which Statistics can be applied, and to learn specialized techniques not taught in the Statistics Department. You need to design your own Applied Cluster. Your cluster may consist of courses from more than one department, but your choices should reflect a theme, so that you study some area of application in breadth and depth. Picking your own applied cluster is a valuable exercise that gives you a chance to explore and refine your interests and to develop a coherent course of study.

Clusters consisting of at least 2 courses from the same department and on the Approved Applied Cluster list are automatically approved. Clusters consisting of courses from 3 different departments must be approved by our Head Undergraduate Faculty Advisor.

Cluster courses not explicitly listed on the Approved Cluster Course list should meet the following criteria:

Generally,

a. Courses must be upper division courses and at least 3 units.
b. Courses in the biological and physical sciences, Chemistry and Engineering are often acceptable.
c. Courses in social sciences must be quantitative.
d. Courses with statistics prerequisites are often acceptable.
e. Courses that are similar to courses offered in the Statistics Department are not acceptable.
f. Courses that primarily teach how to use a particular software package are not acceptable. Courses that focus on the use of spreadsheet software (e.g. UGBA 104) are not acceptable.
g. Courses should be taken in the "home" department. For instance, economics classes should be taken in the economics or business department.
h. Seminars and Special topics courses require approval by the Head Undergraduate Faculty Advisor.

Once you have made your selection, you will need to list the cluster on your Statistics Application before you declare. You may change your cluster at any time as long as the courses are all approved.

11. Is there a list of courses from which I can select APPLIED CLUSTER COURSES?

Yes, the Head Undergraduate Faculty Advisor has approved select courses (See ***APPROVED CLUSTER COURSES for the Statistics Major*** handout). Clusters consisting of at least 2 courses from the same department and on the Approved Cluster list are automatically approved. Clusters consisting of courses from 3 different departments must be approved by our Head Undergraduate Faculty Advisor. Please note that the list is NOT exhaustive. If you would like to use a course that satisfies the applied cluster requirement and is not on the approved list, the Head Undergraduate Faculty Advisor must approve it. Statistics courses cannot be used to fulfill applied cluster courses.

12. What courses are recommended if I am interested in...

a) ... a MASTER'S PROGRAM in Statistics?

Students who are considering a master's program in Statistics should consider a Math cluster. Take these courses before or while applying to graduate school (*not* after you have applied), so the grades are available when admissions decisions are made.

Strongly Recommended: Math 110 or H110, and Stat 151A or Stat 154
Helpful: Math 104
Useful depending on your interests: Math 118, 128A/B, 170, 172, 185/H185

b) ... a PhD PROGRAM in Statistics?
Take these courses before or while applying to graduate school (*not* after you have applied), so the grades are available when admissions decisions are made.

Essential: Math 104 or H104, Math 110 or H110
Helpful: Math 105
Useful depending on your interests: Math 118, 128A/B, 170, 172, 185/H185

c) ... an ACTUARIAL CAREER?
Students preparing for actuarial careers might consider taking Stat 151A, either 150 or 152, and 153.

The Society of Actuaries allows Stat 135 or Stat 200B, and either Stat 153 or Stat 248 to be counted towards Validation by Educational Experience (VEE). Suggested VEE-approved courses for the applied cluster are Econ 101A, Econ 101B, UGBA 103, and UGBA 131.

Demog 110 and Demog C175 are also appropriate cluster courses for students interested in actuarial careers. However, these courses are not currently approved for VEE.

d) ... MBA programs?
Students interested in MBA programs are encouraged to take Business or Economics courses for their cluster, and to take Statistics 151A, 153 and either 152 or 155.

13. Can I take graduate courses to satisfy upper division Statistics requirements?
Yes, you may take graduate courses in statistics to satisfy your upper division requirements with Head Undergraduate Faculty Advisor approval. The Head Undergraduate Faculty Advisor should be contacted to confirm that your graduate course selections are appropriate. Taking any graduate course also requires the consent of the instructor to ensure that you have adequate preparation. Stat 200A-B, 201A-B, 278B, and other seminar courses may not be substituted for 15x-level courses. Graduate courses are not recommended for students who have yet to attempt upper division courses nor for those who have not excelled in upper division courses.

With the instructor's consent and approval from Undergraduate Faculty Advisor:

- 200A, C205A or C205B may be substituted for 134
- 200B, 210A or 210B may be substituted for 135
- 204, C206A or C206B may be substituted for 150
- 230A or 215A may be substituted for 151A
- 232 may be substituted for 152 or 158
- C239A (cross-listed with Pol Sci C236A) may be used in lieu of 157
- 240 may be used in lieu of 157
- C241A or C241B may be substituted for 154
- 243 or 244 may be substituted for 133
- C245A, B, C, E, or F may be substituted for 151B
- 248 may be substituted for 153
- 251 may be used in lieu of 157
- C261 may be used in lieu of 157

Note that Stat 201A-B is not listed because it is generally restricted to Statistics M.A. students and is not recommended for undergraduates.

14. Is there a deadline to declare?
No, you may declare the Statistics major as long has you have completed the prerequisite requirements and your grades are verifiable. However, the College of Letters & Science has policies relating to units caps and may not approve Statistics as a second major if successful completion of the major is not feasible within the allowed timeframe. Students wishing to double/triple major must declare at least one semester prior to graduation. There are no exceptions.

It is advisable to declare as early as possible so we can track your progress and ensure that your applied cluster courses are approved before you take them. Additionally, declared students receive priority when registering for upper division Statistics courses. Students may generally submit their application during the semester in which they are finishing their last prerequisite(s), but applications are only processed at designated times.

15. I want to double/triple major. How many courses can I overlap with my other major(s)?
Double and triple majors may overlap all of the lower division prerequisites (Math 1A, 1B, 53, and 54) but may only overlap up to 2 upper division courses with each additional major.

16. **How many courses can I overlap with my minor?**
Students can overlap up to 1 upper division course with a minor offered by L&S. For non-L&S minors, please refer to: https://ls.berkeley.edu/advising/planning/schedule-planning/minors.

17. **How do I graduate with HONORS in the major?**
To be eligible for honors you must have a 3.3 GPA or higher in the major, in upper division major courses, and overall. You must enroll in Statistics H195 and write a satisfactory thesis under the direction of a Statistics faculty member. You should approach a faculty member to be your advisor by the time you start your senior year. It helps to have an idea of what you would like to write your thesis about.

18. **What do Statistics majors do after they graduate?**
Statistics majors pursue many different careers. Some go to graduate programs in Statistics or other mathematical or scientific disciplines, some to MBA programs, some become actuaries or teachers, and others go into industry or government. Industries with high demand for statisticians include biotechnology, finance, genomics, marketing, pharmaceuticals, and research.

    The Career Center publishes the results of an annual Senior Survey that lists what students have gone on to do after they graduate. See https://career.berkeley.edu/Survey/Survey.

19. **How do I get involved in undergraduate research?**

    a) Visit **reseach.berkeley.edu** for information on workshops, research opportunities, and other resources that help you connect with faculty, find funding, and give you tips on writing research proposals and papers.

    b) Independent research is another option if you have an idea for a research project. This would require finding a faculty advisor to work with you. To find faculty whose research interests are most in line with what you are interested in researching, review the Statistics Faculty Interests page here: http://statistics.berkeley.edu/research. You may also wish to connect with your upper division instructors. Contact potential faculty advisors to see if they can advise you on an independent research project. See **reseach.berkeley.edu** for tips on how to approach faculty and go about proposing a research project.

    c) Every semester, Prof. David Aldous is willing to work with students who have a research project they are interested in pursuing. Students must attend an informational meeting held at the beginning of each semester. Check his website http://www.stat.berkeley.edu/~aldous/Research/Ugrad/ugrad_res.html as it gets closer to the start of the semester.

20. **Which Stat courses are offered in the Summer?**
In recent summers, Stat 2, 20, W21, 133, 134, 135, and 155 have been offered. However, you will have to wait until the prior spring semester to confirm the course offerings in a given summer. Check the Online Schedule of Classes (schedule.berkeley.edu).

Still have questions? Contact one of the Undergraduate Staff Advisors: Denise Yee (dyee@berkeley.edu) or Majabeen Samadi (majabeen@berkeley.edu).

Resources for Undergraduates

- **Statistics Computing Facilities http://statistics.berkeley.edu/computing**
  The Statistical Computing Facility (SCF) provides computing, networking, and information resources to the community of students, faculty, and staff of the Statistics Department, Biostatistics Graduate Group in the School of Public Health, and the Econometrics Laboratory of the Department of Economics. Students in the Statistics major may register for an account, even without enrolling in a lab course. Complete the SCF account request form here: http://statistics.berkeley.edu/computing/accounts. You must be a declared Statistics major.

- **Statistics Profession- Careers, Career Services, Job Listings**
  - American Statistical Association (AMSTAT) http://www.amstat.org/careers/
  - US Labor Department http://stats.bls.gov/ooh/Math/Statisticians.htm
  - California Occupational Guide http://www.labormarketinfo.edd.ca.gov/occguides/
  - Princeton Review http://www.princetonreview.com/Majors.aspx?page=1&cip=270501
  - Be an Actuary http://beanactuary.org/
  - Society of Actuaries http://soa.org/
  - icrunchdata.com – Your Connection for DATA & TECH Jobs
  - QUANTster the quantitative job market daily http://www.quantster.com/
  - UC Berkeley Career Center http://career.berkeley.edu/

- **Internships and Research Experience for Undergraduates**
  - UC Berkeley Career Center (internships) http://career.berkeley.edu/Internships/Internships.stm
  - American Statistical Association (AMSTAT) http://www.amstat.org/education/internships.cfm
  - National Science Foundation (NSF) Research Experiences for Undergraduates (REUs) http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517&org=NSF
  - US Census Bureau Student and Research Opportunities http://www.census.gov/about/census-careers/opportunities/programs/student.html
  - Research in Industrial Projects for Students (RIPS) http://www.ipam.ucla.edu/programs/student-research-programs/research-in-industrial-projects-for-students-rips-2016/
  - Undergraduate Research Apprentice Program (URAP) http://research.berkeley.edu/urap/
  - Haas Scholars Program http://research.berkeley.edu/haas-scholars-program-senior-capstone-experience-all-majors
  - UC Leads Program http://ucleads.org/index.php/about-uc-leads
  - Explorations in Statistics Research: An Undergraduate Summer Program http://www.stat.berkeley.edu/~summer/
  - Cal New Experiences for Research & Diversity in Science (Cal NERDS) http://ucberkeleynerds.com/

- **Student Organizations** - Here are a few undergraduate student groups that may be of interest to Statistics majors. A full directory of registered student organizations can be found here: https://callink.berkeley.edu/organizations.
  - Undergraduate Statistics Association http://www.usaberkeley.org/
  - Cal Actuarial League http://actuary.berkeley.edu/
  - Data Science Society http://www.dssberkeley.org/index.html
  - Sports Analytics Group https://callink.berkeley.edu/organization/sag
  - Society for Women in the Physical Sciences http://swps.berkeley.edu/
  - Math Undergraduate Student Association http://nweb.math.berkeley.edu/wp-musa/
  - A Statistics Graduate Student Association (SGSA, http://www.stat.berkeley.edu/mediawiki/) also exists and sometimes holds events and seminars open to undergraduates.

[RESOURCES CONTINUED]

- **Academic and Community Support** – tutors, study groups, exam reviews, peer advising, counselors, and other students services
    - Student Learning Center (tutors, study groups, exam reviews) http://slc.berkeley.edu/math_stat/
    - Student Life Advising Services/Educational Opportunity Program (academic counseling, peer advising, community building) http://slas.berkeley.edu/
    - Transfer, Re-entry, and Student Parent Center http://transfers.berkeley.edu/
    - Academic Services in the Residence Halls http://academicservices.berkeley.edu/
    - Statistics graduate students who offer private tutoring on a fee for services basis (approx. $25/hour and up) will be listed on the Statistics Department Courses site at the beginning of each semester http://statistics.berkeley.edu/courses/tutoring
    - Student-to-Student Peer Counseling https://sspc.berkeley.edu/
    - Counseling (academic adjustments, stress and anxiety, etc.) and medical issues – University Health Services http://www.uhs.berkeley.edu/
    - Disabled Students' Program (academic accommodations, assistive technology, etc.) http://dsp.berkeley.edu/
    - College of Letters & Science (academic policies and planning) http://ls-advise.berkeley.edu/
    - Multicultural Student Development (academic support, advising and referral, orientation programs, and more!) http://multicultural.berkeley.edu/
    - Berkeley International Office (advising for international students, immigration services, advocacy, and programming) http://internationaloffice.berkeley.edu/